

# Technology How It All Began

Human use of technology began about 2.5 million years ago when the first human changed a natural material to make it more usable. People use technology to extend their abilities and satisfy their wants and needs.

1

The first real civilizations were based on agriculture. When the plow was developed around **4000 B.C.E.**, civilization took a giant leap forward.



Although no one knows for sure, some experts believe the wheel was also invented about the same time as the plow. Until the invention of the first true automobile almost **6,000 years later**, the wagon remained the basic form of transportation.

**Investigate:** Who invented the first true automobile and how was it powered?

2



Construction methods, too, were slow to change, and early buildings were very simple in design. Then around **1700 B.C.E.**, construction technology began to change rapidly. Simple rectangular structures were transformed with columns and beams, as seen in Greek architecture.

3



The Romans, too, were engineers. They developed bridges, roads, tunnels, and aqueducts, some of which are still being used today. Similar achievements were also taking place in China and Central America.

**Investigate:** Which people developed a well-maintained system of roads in South America, and how many miles did it cover?

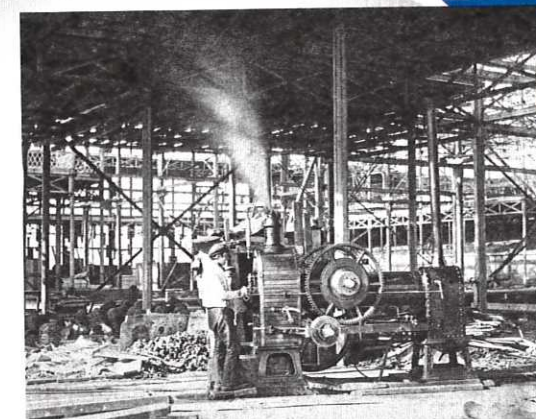
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6

Then, during the **18th century**, the steam engine was developed. The industrial age began.

**Investigate:** What famous revolution did the steam engine start and which technologies were affected?



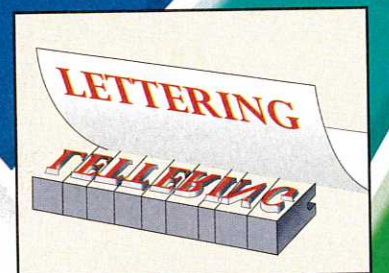
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Energy is essential to most technology, and, since pre-historic times, humans had used energy in the form of muscle power and fire. **The Middle Ages** saw a development in wind power, not only for ships, but also for manufacturing.

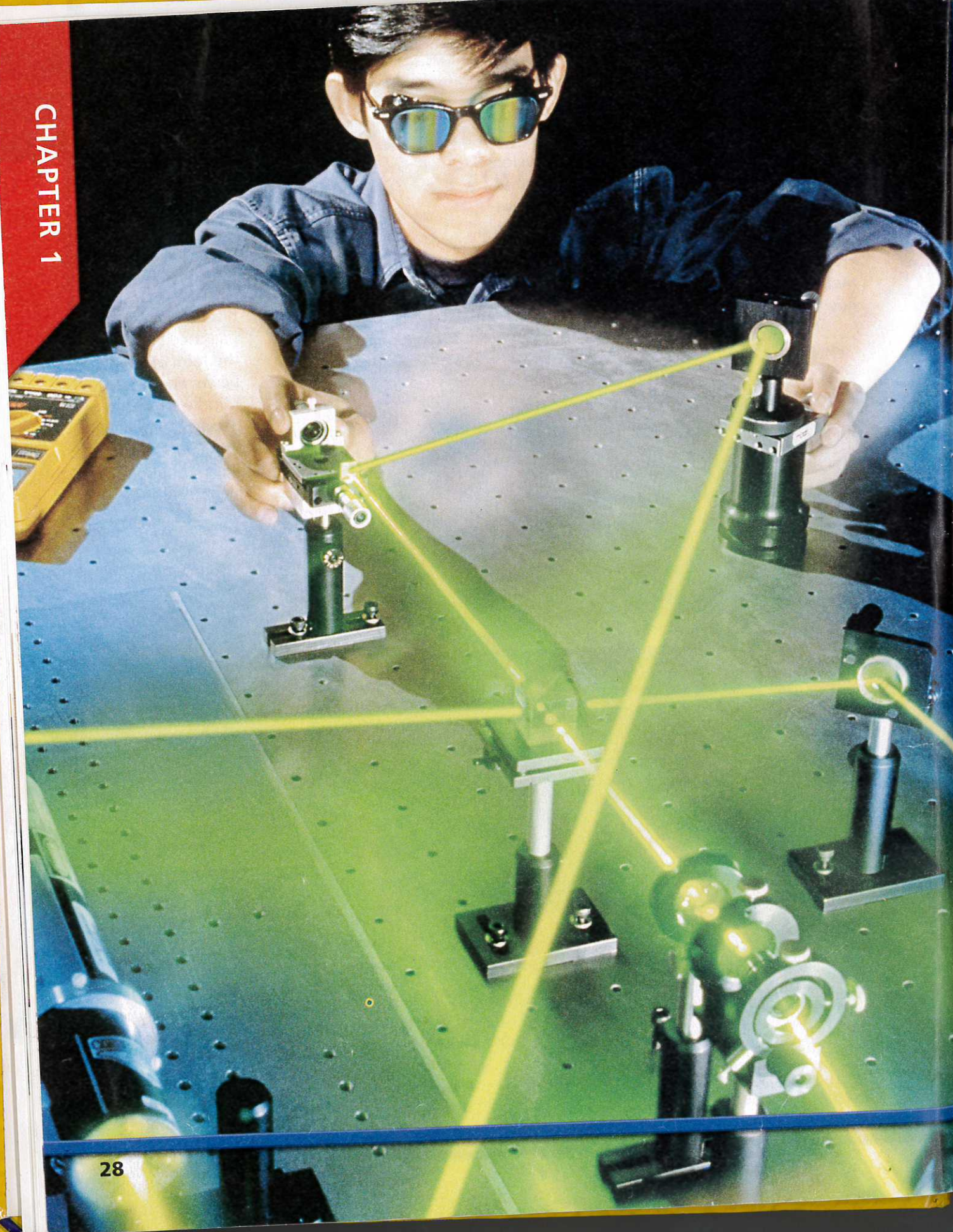


7

Equally important to the development and growth of technology was communication. What moved communication forward at lightning speed was the development of movable type in **1440**. Information spread rapidly, especially information about all kinds of technology.







**W**hat is technology? Let's answer that question by asking another: What *isn't* technology? Look out a window. Perhaps you see trees, plants, rocks, or other natural items. That's what technology isn't: anything created by nature. Sand, as it exists in nature, doesn't involve technology, and neither does water.

People take those natural materials and turn them into useful products. Trees are turned into lumber to make houses and furniture. Plants such as asparagus and tomatoes are put into cans and sold as food. Special rocks like iron ore are turned into metal, and sand can be changed into glass. Water can be used to make soft drinks.

Technology is usually involved in all the products, inventions, and discoveries made by people. How much do you know about technology? Do you know how inventors invent? Do you know what makes your computer or bike work? Do you understand how technology can hurt the environment? In this book you are going to learn the answers to these questions and many more *about* technology. You will also learn to *do* technology. Best of all, you will probably learn to *enjoy* technology.



Mirrors and optical lenses, when combined with a laser beam, can do amazing things in the world of technology.

## SECTIONS

- 1A** Technology and You
- 1B** Making Technology Happen
- 1C** How Technology Changes





## SECTION 1A

### Objectives

- ▶ Define technology.
- ▶ Give reasons for studying technology.
- ▶ Explain the advantages of being technologically literate.

### Terms to Learn

- technologically literate
- technology

### Standards

- Cultural, Social, Economic & Political Effects
- Role of Society
- Information & Communication Technologies

**technology**  
the practical use of human knowledge to extend human abilities and to satisfy human needs and wants

**Figure 1-1** Did you realize that a home entertainment center is a communication system? What do you think is being communicated?

## Technology and You

Do you see any products of technology around you?

**T**echnology is the practical use of human knowledge to extend human abilities and to satisfy human needs and wants. Technology provides us with most of the things we use in our society.

Lift your eyes from this page and look around. What are some of the things that you can see?

- You might see a computer, a cell phone, or a DVD player. Those are all products of communication technology. See Figure 1-1.
- You might see a car, a commuter train, or an airplane. Those are products of transportation technology. See Figure 1-2.
- Perhaps you see cereal on a kitchen table or vitamins on a shelf. Those are products of biotechnology.
- If the items you see were made in factories, they are also considered products of manufacturing technology.
- When you look out the window, do you see a house, a bridge, or a skyscraper? Those are products of construction technology.



**Figure 1-2** This is a concept car—a designer's idea of a car for the future. How are the seats different from those in today's cars?



All this technology has improved over the years. When your grandparents were your age, each home probably had one rotary-dial telephone like the one shown in Figure 1-3. When your parents were growing up, they might have had one or two keypad telephones. In your home today, you might have access to several keypad telephones and maybe a cell phone with an Internet connection or one that sends and receives pictures. Advances in telephone design have been almost continuous since Alexander Graham Bell developed his model in 1876. You could say similar things about almost any other item.

Think about how cars are different from what they were like several years ago. Modern houses are also different, as are the foods you buy and your forms of entertainment. Medical equipment and procedures are other examples. What other changes in technology can you name?

**Figure 1-3** Have you ever used a rotary-dial phone? It seems very slow compared to keypad phones.





## Why We Study Technology

► Why do you think the average person needs to understand technology?

Why study technology? That's an easy question to answer. Technology is fun, rewarding, and exciting.

Technology is fun because you get to work with your hands and mind using tools and materials. Instead of only reading about bridges, you might build a model of one. Instead of only reading about electricity, you might make a small electric motor. Instead of only reading about wood, you might make something useful out of it. See Figure 1-4. Technology is always an up-to-date subject. You'll learn how to make and repair many things that can help you, not only in the future, but also right now.

Technology is rewarding because you can see the results of your work. People who put space shuttles together have a direct connection to the success of the mission. They are the ones who tighten the bolts, assemble the electronic equipment, and test the controls. A successful flight frequently brings tears of joy to many of the workers. The shuttle means more to them than just a piece of equipment.

Technology is exciting because each day brings new ideas and new challenges. Some days you and your class

**Figure 1-4** Learning how to build a wood project yourself can be very rewarding. Do you know what machine these people are using?



## CAREERS

### Selecting a Rewarding Career

Finding a career suited to your needs and wants is very important.

Web designers often feel satisfied at seeing something they designed being displayed on the Internet for millions to see and use.

Being a web designer may not interest you, but you probably have some ideas about the kind of work you would like to do some day. That's good, because it's not too early to begin thinking about a future career. For example, consider your activities during a typical week:

- ✓ Which of those activities did you enjoy the most?
- ✓ What makes those activities especially enjoyable?
- ✓ How do those activities reflect your interests and values?

Answering questions like these will point you toward a career you will find both satisfying and rewarding.

#### Web Designer

Company is looking for a person interested in an entry-level position in web design. Applicant must have experience with and knowledge of web design and must be creative. Responsibilities will include site design and creation, as well as keeping informed of current Web trends. Work is demanding but satisfying and rewarding.

might work on computer projects and other days on engine projects. See Figure 1-5 on page 34. It will be that way if you become a full-time technologist. No two days will be the same. Think how dull your life would be if you always did the same thing. That simply doesn't happen in the field of technology.

Studying technology will also help you develop your problem-solving skills. You will learn to identify a problem and come up with a solution. Technology is important in solving problems. For example, technology is working to provide pure water to an ever-increasing population. Technology also lets us maintain communication links with fire departments and hospitals. More efficient automobiles extend our limited fuel supplies. New construction techniques can quickly replace older buildings. The list is almost endless.

You will also find that technology is related to other subjects you study in school. Mathematics and science are



**Figure 1-5** Does working on a small engine sound difficult to you? With a basic understanding of technology, you may not find it as hard as you think.



### TECH CONNECT MATHEMATICS

#### Use Your Seatbelt

Do you wear your safety belt when traveling in a car? What states require the use of seatbelts? Has seatbelt technology paid off? Statistics can tell you.

**ACTIVITY** Research and compare the percentage of people who receive serious injuries when not wearing seatbelts to those who receive serious injuries while wearing them. Do you like those odds?

**technologically literate**  
term used to describe someone who is informed about technology and feels comfortable with it

two examples. You may find you enjoy all your classes more after you begin to see this relationship.

## Being Technologically Literate

Do you know what *technologically literate* means?

Technology is often part of the news. A journalist might report on a particular electrical power plant, a food additive, or a safety device on an automobile. It is important that you understand the importance of the subject. For example, automobile air bags have saved many lives in collisions. However, they inflate so rapidly that they have caused injury and death in some cases. As a result, the federal government lets car owners install an on/off switch for the air bags. Do you think the government should let people do this?

Understanding technology can help you answer that question. However, there is usually no one correct answer. You will have to evaluate each situation and make an informed decision. When you can do this, you will be **technologically literate**. You will be comfortable with the use of technology. You will not be afraid of it, and you will not think it has all the answers either.

## ETHICS in ACTION

### Why Are Ethics Important?

Ethics are moral principles and values. Although something that is unethical may not be against the law, most people will probably agree that it is wrong.

Some professions, such as medicine, follow a code of ethics that regulates behavior. For example, it would not be ethical for a doctor to promote a treatment that had been proven not to work.

Ethics have an impact on us and on our society. Unethical people are seldom trustworthy and may have trouble keeping friends or a

job. They may have trouble feeling good about themselves.

The development and use of technology sometimes poses ethical issues. For example, people can eavesdrop on cell phone users. Is this ethical? Some of these issues will be discussed in this course. What effect do you think ethics has or should have on technology?

**ACTIVITY** Interview three friends or family members. Ask them to give an example of what ethics means to them.

## SECTION REVIEW 1A

### Recall

1. Name two communication products.
2. Name two transportation products.
3. Name two construction products.
4. Name one biotechnology product.
5. What does it mean to be technologically literate?

### Think

6. How are cars today different from those made fifty years ago? How did society's demands and values shape these differences?

7. How are grocery store foods today different from those made fifty years ago? How did society's demands and values shape these differences?

### Apply

8. **Research** Investigate automobile air bags and list their advantages and disadvantages. Develop an opinion about the use of air bags and write a paragraph defending your opinion.